

## **ABSTRACT**

A sensor for measuring mud resistivity in a borehole includes a transmitter having a magnetic moment in a first direction; and a receiver having a magnetic moment in a second direction, wherein the first direction and the second direction are substantially different, wherein the transmitter and the receiver are disposed in an insulating collar of a downhole tool, and wherein the transmitter is disposed at a selected distance no more than 10 inches from the receiver along a longitudinal axis of the downhole tool.